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PATENT
Docket No. H 5265

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of Hackbarth, et al. Confirmation No.: 2641
Serial No.: 10/796,681 Examiner: William K. Cheung
Filed: March 9, 2004 Art Unit: 1796
Title: UV-CURING ANTI-FINGERPRINTING COATINGS

DECLARATION UNDER 37 CFR 1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Holger Endres, declare the following:

1. I am an inventor of the above-captioned patent application entitled "UV-Curing Anti-Fingerprinting Coatings".
2. I have been a research scientist at Henkel AG & Co. KGaA (hereinafter "Henkel") since November 1, 2004 and have worked for 5 years in the arts related to coatings for metal.
3. I obtained a engineer (FH) degree in chemistry and paints from Fachhochschule Druck / Stuttgart / Germany in the year 1991.
4. I have reviewed the Official Action dated June 9, 2009 in which the examiner asserts that "applicants' specification fails to provide any indication to support applicants' argument that '(meth)acrylates' can denote both 'methacrylates and acrylates'", see page 11, first paragraph.
5. In the above-captioned application, the term "(meth)acrylates" was used to denote both "methacrylates and acrylates" and this would be readily understood by one of skill in the polymer arts at the time the invention was made.
6. It is common practice for those of skill in the art to use the term "(meth)acrylates" to denote both "methacrylates and acrylates". For example, a brochure from Rahn AG, a manufacturer of raw materials for polymers uses the heading "Urethane (Meth)acrylates" for a listing that includes urethane acrylate products and urethane methacrylate products, specifically "Genomer 4215, Aliphatic UA" meaning aliphatic urethane acrylate, and "Genomer 4205, Aliphatic UMA" meaning aliphatic urethane methacrylate. This brochure also uses "Epoxy (Meth)acrylates" in the same manner. See Rahn AG, "Rahn Energy Curing Product Guide", attached as Exhibit A.

7. In the Examples, "acrylates" were used as raw materials to make-up compositions for testing. Acrylate and methacrylate compounds that differ only in the presence or absence of the methyl group are known in the art to have similar properties. One of ordinary skill in the art, reading the specification including the Examples as a whole, would understand that Applicants had invented compositions that include acrylate and/or methacrylate components in the amounts disclosed in the specification and in the Examples.

8. I have reviewed U.S. Patent No. 5128391, U.S. Patent 5128387, U.S. Patent 5629365 and U.S. Patent 42050018. I am familiar with these patents as the state of the art. The '391 and '387 patents are directed to the surface protection of beverage cans, especially aluminum cans (Col. 3, lines 31-33). These are short-living goods which usually are not or at least only rarely cleaned after their manufacture. The claimed invention focuses on long-living goods like furniture, household appliances, and the like (Specification, page 1, lines 19-32), which are cleaned very often during their lifespan, so that the scratch resistance of the coating must be very pronounced. Furthermore, fingerprints must be easily removed from such surfaces. At the time the invention was made, there was a significant unmet need for durable coatings that combined fingerprint resistance and scratch resistance. Neither of these problems is considered in the '391 or '387 references.

9. Those of ordinary skill in the art would not have been motivated by the Nagasawa reference to add such fillers to the coatings of the '391 or '387 patents. In Nagasawa, pigments are used as thixotropic agents ('018, col. 12, l. 3-5, as quoted by the examiner). This teaches away from the present invention, as thixotropic agents are undesirable since the claimed invention must have a viscosity below 1000 mPas. With the viscosity limitation in mind, one of ordinary skill in the art would not consider to add the thixotropic agents of the '018 reference to the product of the '391 patent, as an undue increase of viscosity would have been expected. Therefore, it requires an inventive step to include those pigments in a required low-viscosity formulation despite their known property of thixotropic agents.

10. Attached to this my declaration as Exh. B are Tables 1-4, showing testing of compositions according to the invention. These compositions all contain micronized fillers added as an adjuvant for increasing the surface hardness (WO document, page 7, last sentence of the second section) to thereby improve scratch resistance.

11. Micronized fillers, nanoscale SiO_2 (Tables 1 and 2: pyrogenic silicic acid; specific surface area 150 m^2/g) on the one hand and nanoscale Al_2O_3 (Table 3: pyrogenic aluminum oxide; specific surface area 100 m^2/g) were incorporated in a fine dispersed form into the compositions according to the invention.

12. Determination of the surface quality of the coating after rotary treatment of a coated substrate according to the invention with steel wool for a defined coating weight and predetermined speed of rotation (see Table 4), as compared with verifying the scratch resistance with a hardness test piece (see Table 2) of the description, is a method accepted by customers to qualitatively determine scratch and abrasion resistance, and is routinely conducted for quality control.

13. As shown in Table 4, the coating materials containing these fillers, even though dispersed (B1-B10), compared with those which are free of the latter, form hardened coatings on brushed stainless steel with increased scratch and abrasion resistance, which additionally are dirt-repellent in the long term. Coating materials, for which the content of these fillers increased moderately (B3-B6 and B7-B10), as a hardened coating, also delivered increased surface hardness.

14. It was also unexpectedly found empirically that the presence of modified di- or tri-alkoxysilanes additionally had a positive effect on the surface hardness, when coatings were formed from coating materials containing these fillers.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

Holger Endres

Holger Endres

Dezember 08, 2009

Date

EXHIBIT A
To Holger Endres Declaration

RAHN | EnergyCuring

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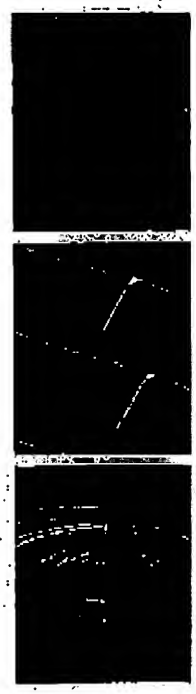
Product guide



Contents

This guide includes our most successfully used and commercially fully supported products. If your requirements cannot be met with any of these products, please contact us directly to help you find a solution.

Identification Code

Dilutions

M22 = GENOMER® 1122
PP = PPTTA
EHA = 2-Ethylhexyl-Acrylate
ETM = TMP(EO)3TA
HD = HDDA
TM = TMPTA
TP = TPGDA
GP = GPTA

Ask for other available dilutions

GENOMER® Product Code

1st number: Product Group
2nd number: Functionality
3rd and 4th number: Product reference

Product Data

Color A = APHA
Color G = Gardner
2 = Literature Value

Skin Irritation

0 = Primary Irritation Index (scale 0–8)
1 = Primary Irritation Index (OECD scale 0–4)
2 = Literature

USCL (EC Dangerous Substances Classification)

Xi = Irritant
Xn = Harmful
N = Dangerous for the Environment

Classification in accordance with the current EC directives and the CEFIC guide to the classification and labelling of Acrylates

Registration Status

EC = European Inventories (EINECS, ELINCS, NLP, Polymer)
TSCA = Toxic Substances Control Act (USA)
CEPA = Canadian Environmental Protection Act
L = Listed
– = Not listed

S = SNUR
D = DSL
N = NDSL
NN = NDSL Notified
U = Under Investigation
LVE = Low Volume Exemption (< 1MT)

Properties

++++ = excellent +++ = good ++ = moderate + = low

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Products

Urethane (Meth)Acrylates

Product	Product Data (Typical Values)							HS & Registration				
	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C (cps at 77 °F))	Tg (°C) / Tg (°F)	Skin Irritation	DSCL (S)ymbol	DSCL (Risk-Phrases)	EC-Status	TSCA-Status	CEPA-Status
GENOMER® 4188/EHA	Aliphatic UA	1	1 G	5	120 000	-10 / 3	–	Xi	36/37/38-43	L	L	
GENOMER® 4205	Aliphatic UMA	2	100 A	2	9 000	–	–	Xi	36/38	L	L	N
GENOMER® 4215	Aliphatic UA	2	2 G	1	20 000 (20°C/68°F)	-24 / -11	0.1*	free	–	L	L	D
GENOMER® 4217	Aromatic UA	2	1 G	3	100 000	35 / 31	–	Xi	36/38	L	L	D
GENOMER® 4256	Aliphatic UMA	2	3 G	4	12 000	–	–	free	–	L	L	NN
GENOMER® 4269/M22	Aliphatic UA	2	1 G	3	55 000	-15 / 5	–	Xi	36/37/38	L	L	NN
GENOMER® 4297	Aliphatic UMA	2	200 A	2	9 000	–	–	free	–	L	L	N
GENOMER® 4302	Isocyanurate	3	80 A	1	10 000 (60°C/140°F)	40 / 104	–	Xi	36/38	L	L	NN
GENOMER® 4312	Aliphatic UA	3	1 G	1	60 000	31 / 88	0.1*	free	–	L	L	D
GENOMER® 4316	Aliphatic UA	3	1 G	1	58 000	4 / 39	0.5*	free	–	L	L	D
GENOMER® 4425	Aliphatic UA	4	1 G	5	4 500	33 / 91	–	Xi	36	L	U	–
GENOMER® 4590/PP	Aliphatic UA	5	2 G	1	11 000	30 / 86	–	Xi	36/38	L	L	–
GENOMER® 4622	Aromatic UA	6	2 G	3	30 000	48 / 120	–	Xi	36/38-43	L	L	D
URETHANE ACRYLATE 80-283/W	Aliphatic UA Dispersion	3	–	1	30	48 / 118	0.2*	free	–	L	L	NN
URETHANE ACRYLATE 80-832	Aliphatic UA hydroxy functional	3	1 G	1	50 000	33 / 91	–	Xi	36/38	L	L	–

Available dilutions: GENOMER® 4188/M22, GENOMER® 4215/M22 * In 60% Toluene

Products

Epoxy (Meth)Acrylates

Product	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C) / Tg (°F)	Skin Irritation	DSCL (Symbol)	DSCL (Risk-Phrases)	EC-Status	TSCA-Status	CEPA-Status
GENOMER® 2235	Aliphatic Epoxy Acrylate	2	3 G	7	1 100	-	-	Xi	36/38	L	L	D
GENOMER® 2253	Mod. Epoxy Acrylate	2	1 G	1	30 000	0 / 32	-	Xi	36/38-43	L	L	D
GENOMER® 2255	Mod. Epoxy Acrylate	2	2 G	1	45 000	35 / 95	0.0[1/2]	Xi	36/38	L	L	D
GENOMER® 2263	Mod. Epoxy Acrylate	2	2 G	1	25 000	40 / 104	0.0[1/2]	Xi	36/38	L	L	D
GENOMER® 2283	Epoxy Acrylate	2	1 G	4	4 000 (60°C/140°F)	47 / 117	0.0[0]	free	-	L	L	D
GENOMER® 2280	Mod. Epoxy Acrylate	2	2 G	4	5 000 (60°C/140°F)	47 / 117	-	Xi	36/38	L	L	D
EPOXY METHACRYLATE 87-953	Epoxy Methacrylate	2	2 G	-	4 600 (60°C/140°F)	48 / 118	-	free	-	L	L	D

Polyester/Polyether Acrylates

Product	Description	Functionality	Color	Acid Value (mg KOH/g)	Viscosity (mPa.s at 25 °C) (cps at 77 °F)	Tg (°C) / Tg (°F)	Skin Irritation	DSCL (Symbol)	DSCL Risk-Phrases	EC-Status	TSCA-Status	CEPA-Status
GENOMER® 3364	Polyether Acrylate	3	15 A	0.6	130	32 / 90	0.0[0]	free	-	L	L	NN
GENOMER® 3419	Polyether Acrylate	4	60 A	0.5	4 600	47 / 1	0.0[0]	free	-	L	L	NN
GENOMER® 3497	Polyether Acrylate	4	40 A	0.6	600	30 / 86	0.0[0]	free	-	L	L	NN
GENOMER® 3611	Polyester Acrylate	6	10 G	8	8 000	35 / 94	-	Xi	43	L	L	NN
POLYESTER ACRYLATE 03-949	Polyester Acrylate	3	3 G	8	20 000	28 / 82	-	Xi	36/38-43	L	L	-

EXHIBIT B
To Holger Endres Declaration

EXHIBIT B

Table 1 Proportions in percent of the different components of the compositions according to the invention containing nanoscopic SiO_2

		Test number (corresponding to the laboratory logbook)			
	Raw material	VB1 (75/2)	VB2 (75/3)	B1 (75/1)	B2 (75/4)
a[1])	Aliphatic hexafunctional urethane acrylate MW 1000	34.4	32.4	31.4	31.5
a[2])	Aromatic epoxy diacrylate MW 460	37.4	35.3	34.2	34.3
b)	Isobornyl acrylate	21.3	20.0	19.4	19.5
c)	Acid triacrylate (acid index 150)	1.8	1.7	1.6	1.6
d[1])	Acid monoacrylate	-	2.9	2.9	2.8
d[2])	Photoinitiator	5.1	4.7	4.7	4.6
d[3])	Pyrogenic silicic acid	-	-	2.9	2.8
e)	Acrylate-modified di- or tri-alkoxy silane	-	3.0	2.9	2.9

EXHIBIT B

Table 2 Proportions in percent of the different components of the compositions according to the invention containing nanoscopic SiO_2

Raw material as in Table 1	Test number (corresponding to the laboratory logbook)			
	B3 (82/1)	B4 (82/2)	B5 (82/3)	B6 (82/4)
a[1])	32.1	31.5	30.9	29.6
a[2])	34.9	34.3	33.7	32.2
b)	19.8	19.5	19.1	18.3
c)	1.7	1.7	1.6	1.6
d[1])	2.8	2.8	2.7	2.6
d[2])	4.7	4.6	4.5	4.4
d[3])	0.9	2.8	4.5	8.7
e)	2.9	2.9	2.8	2.7

Table 3 Proportions in percent of the different components of the compositions according to the invention containing nanoscopic Al_2O_3

Raw material as in Table 1*	Tested number (corresponding to the Laboratory Logbook)			
	B7 (86/1)	B8 (86/2)	B9 (86/3)	B10 (86/4)
a[1])	32.3	32.1	31.6	31.0
a[2])	35.1	35.0	34.5	33.8
b)	19.9	19.8	19.5	19.2
c)	1.7	1.7	1.7	1.6
d[1])	2.9	2.9	2.8	2.8
d[2])	4.8	4.8	4.7	4.6
d[3])*	0.4	0.9	2.3	4.2
e)	2.9	2.9	2.8	2.8

* pyrogenic aluminum oxide

EXHIBIT B

Table 4 Influence of micronized fillers on the scratch resistance of the hardened coating agent on brushed steel

Test number	Hardness test pencil 318 (Erichsen)	Abrasion resistance on a scale from 1-10* (5 = brushed steel)
VB1	-	
VB2	--	
B1	+	
B2	+	
B3	-	
B4	+	
B5	+	
B6	++	
B7		3
B8		1-2
B9		1
B10		1

* Optical assessment of abrasion caused by saponified steel wool, which for a supporting weight of 1.2 kg rotates at 66 rpm for 1 min on the coated steel surface:

1 . not visible
2 hardly visible
3 visible/hardly scratched
4 well visible/scratched
5 very visible/strongly scratched (corresponds to the abrasion behavior of brushed steel)